

CLAIMS:

What is claimed is:

1. A recharging system, comprising:
 - a nesting station having a first connector for a self-mobile device, said first connector being configured in such a manner that self-mobile devices can self-position into a position for charging;
 - a plurality of self-mobile devices, each of said plurality of self-mobile devices having a capability to self-propel into a charging position with said first connector;
 - a first communications device associated with said nesting station and a plurality of second communication devices associated with respective ones of said plurality of self-mobile devices, whereby said nesting station can have two-way communications with said plurality of self-mobile devices;
 - a first protocol for negotiating and utilizing respective charging times for said plurality of self-mobile devices, said protocol being negotiated by said nesting station and each of said plurality of self-mobile devices, whereby human intervention is not necessary for charging of said plurality of self-mobile devices.
2. The recharging system of Claim 1, further comprising a second protocol for automatically providing new instructions or updates to basic programming to ones of said plurality of self-mobile devices.

3. The recharging system of Claim 2, wherein said second protocol is invoked during said respective charging times for said plurality of self-mobile devices.

4. The recharging system of Claim 1, wherein said protocol comprises:

establishing a communications link between said nesting station and one of said plurality of self-mobile devices that needs charging;

providing an indication of whether the charge of a battery of said one of said plurality of self-mobile devices has dropped below a given level;

if said the charge of said battery has dropped below a given level, assigning said one of said plurality of self-mobile devices a time at to report to said nesting station for charging.

5. The recharging system of Claim 1, wherein said first connector comprises a first flat plate connected to form a negative contact and a second flat plate connected to form a positive contact.

6. The recharging system of Claim 6, wherein said first and second flat plates are mounted horizontally and a self-mobile device positions over said first and said second plates for charging.

7. The recharging system of Claim 6, wherein said first and second flat plates are mounted vertically and a self-mobile device positions over said first and said second plates for charging.

8. The recharging system of Claim 1, further comprising a second connector configured in such a manner that self-mobile devices can self-position into a position for charging.

9. The recharging system of Claim 2, wherein said first connector and said second connector are identical.

10. The recharging system of Claim 2, wherein said first connector and said second connector work with different types of self-mobile devices.

11. A recharging station, comprising:

a first connector for a self-mobile device, said first connector being configured in such a manner that self-mobile devices can self-position into a position for charging;

a first communications device capable of carrying on two-way communications with a plurality of self-mobile devices;

a processor connected to said first connector and said first communications device, said processor connected to negotiate with the plurality of self-mobile devices according to a first protocol in order to administer time slots for charging the plurality of self-mobile devices.

12. The recharging station of Claim 11, further comprising a second protocol for automatically providing new instructions or updates to basic programming to ones of the plurality of self-mobile devices.

13. The recharging station of Claim 11, wherein said first connector comprises a first flat plate connected to form a negative contact and a second flat plate connected to form a positive contact.

14. The recharging station of Claim 13, wherein said first and second flat plates are mounted horizontally and a self-mobile device positions over said first and said second plates for charging.

15. The recharging station of Claim 13, wherein said first and second flat plates are mounted vertically and a self-mobile device positions over said first and said second plates for charging.

16. The recharging system of Claim 11, further comprising a second connector configured in such a manner that self-mobile devices can self-position into a position for charging.

17. The recharging system of Claim 16, wherein said first connector and said second connector are identical.

18. The recharging system of Claim 16, wherein said first connector and said second connector work with different types of self-mobile devices.

19. A rechargeable robotic device, comprising:
a body;
a processor attached to said body;
a propulsion device attached to said body to providing self-propulsion;

a communications device attached to said body and connected to said processor to provide two-way communications with a charging station;

a battery connected to said processor, said propulsion device, and said communications device;

a connector for charging said battery, said connector being configured in such a manner that said robotic device can self-position for charging;

wherein said processor is connected to negotiate with a charging station, using a given protocol, to schedule a time slot for charging of said battery.

20. The rechargeable robotic device of Claim 19, wherein said protocol comprises:

determining that the charge of said battery has dropped below a given level;

establishing a communications link with a charging station;

requesting a time slot for charging;

receiving a suggested time slot for charging;

verifying that said suggested time slot is acceptable and storing said suggested time slot in memory; and

reporting for charging at said time slot.

21. A method of recharging robotic devices, said method comprising the steps of:

querying a robotic device whether it has reached a given level of depletion;

if the robotic device has reached said given level of depletion, negotiating with said robotic device using

a protocol to determine a time slot for charging said robotic device; and

providing charging for said robotic device during said time slot.

22. The method of Claim 21, further comprising the steps of:

providing said robotic device with new tasks or updated programming during said time slot.

23. The method of Claim 21, wherein the step of using said protocol comprises the steps of:

offering a next available time slot at which said robotic device can report to said charging station for charging; and

if said robotic device provides a confirmation of said time slot, scheduling said robotic device for said time slot, else

incrementing said available time slot and returning to said offering step.

24. The method of Claim 21, wherein said charging station maintains separate schedules for each of a plurality of connectors.

25. The method of Claim 21, wherein said plurality of connectors are different and said protocol includes determining a connector of said plurality of connectors that said robotic device can utilize for charging.

26. A method of recharging a robotic device, said method comprising the steps of:

determining that an onboard battery has reached a given level of depletion;

contacting an associated charging station;

requesting charging;

receiving and storing a time slot for charging; and reporting for charging during said time slot.

27. The method of Claim 26, further comprising the steps of:

receiving new tasks or updated programming during said time slot.

28. The method of Claim 26, further comprising notifying said charging station of a need for a specific connector needed for charging.

29. A method of recharging robotic devices, said method comprising the steps of:

detecting when a robotic device has reached a given level of depletion;

establishing a communications link between said robotic device and a charging station;

using a protocol to determine a connector or correct current needed for charging said robotic device; and

charging said robotic device using said connector or said correct current;

wherein said steps are performed solely by said robotic device and said charging station.

30. The method of recharging robotic devices of Claim 29, wherein said correct current has the output characteristics of a voltage source.

31. The method of recharging robotic devices of Claim 29, wherein said correct current has the output characteristics of a current source.

32. A computer program product embodied on a computer readable medium and comprising:

first instructions for detecting when a robotic device has reached a given level of depletion;

second instructions for establishing a communications link between said robotic device and a charging station;

third instructions for using a protocol to determine a time slot for charging said robotic device; and

fourth instructions for charging said robotic device during said time slot;

wherein said instructions are embodied to be performed solely by said robotic device and said charging station.

33. The computer program product of Claim 32, further comprising:

fifth instructions for providing said robotic device with new tasks or updated programming during said time slot.

34. The computer program product of Claim 32, wherein said third instructions comprise:

sixth instruction in said nesting station, for providing, in response to a request, a first available time at which said robotic device can report to said nesting station for charging; and

seventh instruction in said robotic device for providing either a confirmation of said time slot or a request for a different time slot.

35. The computer program product of Claim 32, wherein said nesting station comprises fifth instructions for maintaining separate schedules for each of a plurality of connectors.